Forces Guided Notes

What is a force?

* A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Changes the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of all objects
* Anytime you see something moving, you can be sure that a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ created its motion

Forces are Everywhere

* Without forces, sports, dancing, driving…basically everything would be impossible
* Some forces, like \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, are present when things are not moving

Types of Forces

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ force: created between two touching objects (holding a pencil, hugging someone, etc.)
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ force: force that can be exerted on an object without contact (think “fields”)

Types of Forces

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: force of attraction between two objects, Earth’s gravity pulls on all objects (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ force)
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: a force that resists motion between two surfaces that are pressed together (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ force)
* \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: magnetism (distant), tension (contact), electrostatic (distant), support (contact)

Types of Forces

* Looking at this picture again, there is another force present… what is it?

What is holding the skater up? The ground!

* It is called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ force.
* It is the support force exerted upon an object which is in contact with another stable object.
* For example, if a book is resting upon a surface, then the surface is exerting an upward force upon the book in order to support the weight of the book

Units

* The unit for force is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Abbreviated \_\_\_\_\_\_\_\_\_\_\_
* 1 newton – accelerating a 1kg object at 1m/s each second
* 1 pound = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ newtons

Forces have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ & \_\_\_\_\_\_\_\_\_\_\_\_\_\_

* Like velocity, force is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* That means it has \_\_\_\_\_\_\_\_\_\_\_ (magnitude) & direction.

Magnitude = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the force – it is measured in Newtons

Force Vectors

* A vector is an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ used to show the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ & \_\_\_\_\_\_\_\_\_\_\_ of a force.
* The arrow \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the force.
* The \_\_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the arrow represents the \_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the force.

Force Vector Examples

* A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ force of 5 N would have a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ arrow.
* A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ force of 500 N would have either a \_\_\_\_\_\_\_\_\_\_\_ arrow or a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ one.

Combining Forces

* Usually, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ force is exerted on an object at the same time.
* The \_\_\_\_\_\_\_\_ of all forces acting on an object is called the \_\_\_\_\_\_\_\_\_ force.
* You need to look at the net force in order to figure out if or how an object will \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Balanced Forces

* Net force = \_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_ change in motion
* (object is not moving)
* List 3 examples of balanced forces: paper on desk, you in the chair, flag not moving

Unbalanced Forces

* There is a \_\_\_\_\_\_\_\_\_\_\_ force acting on an object
* Causes a change in motion
* Possible to add the forces together to find the size and direction of the net force

Unbalanced Forces

* If the forces are moving in the \_\_\_\_\_\_\_\_\_\_\_\_ direction, \_\_\_\_\_\_\_\_\_\_\_ the forces.
* Example:

Girl pushes 25 N to the right, Boy pulls 20 N to the right, Net Force = 45 N to the right

Unbalanced Forces

* If the forces are moving in \_\_\_\_\_\_\_\_\_\_\_\_\_\_ directions, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the forces.
* Example:

Dog #1 pulls 10 N to the left, Dog #2 pull 12 N to the right, Net Force = 2 N to the right

You Try It: Calculating Net Force



Sample Test Question #1



Sample Test Question #2

